

CLAIMS

[1] A fuel cell system comprising:

a hydrogen generator configured to generate hydrogen by causing a reforming reaction to proceed using a material and water;

a fuel cell configured to generate power by causing an electrochemical reaction to proceed using the hydrogen generated in said hydrogen generator and an oxidizing agent;

a cooling water circulation portion configured to circulate water for cooling said fuel cell;

a water condenser configured to condense water discharged from at least one of said hydrogen generator and said fuel cell;

a first water storage portion configured to store the water condensed by said water condenser;

a water supply portion configured to take out the water from said first water storage portion and to supply the water to at least one of said hydrogen generator, said fuel cell, and said cooling water circulation portion;

a controller; and

a water replenishment portion configured to replenish the water in said first water storage portion from said cooling water circulation portion;

wherein said first water storage portion is provided with a discharge port; and

said controller is configured to perform control so that the water in said first water storage portion is discarded through the discharge port and said water replenishment portion causes said cooling water circulation

portion to replenish the water in the first water storage portion.

[2] The fuel cell system according to claim 1, wherein said controller is configured to perform control so that at least a part of the water in said first water storage portion is discarded through the discharge port, and said water replenishment portion causes said cooling water circulation portion to replenish, in said first water storage portion, water equal in amount to the at least a part of the water.

[3] The fuel cell system according to claim 1, wherein said controller is configured to perform control such that the water in said first water storage portion is discarded through the discharge port, and said water replenishment portion causes said cooling water circulation portion to replenish the water in said first water storage portion, at a time in a stop state of a power generation operation of said fuel cell.

[4] The fuel cell system according to claim 3, wherein said controller is configured to perform control such that the water in said first water storage portion is discarded through the discharge port just after stop of the power generation operation of said fuel cell and said water replenishment portion causes said cooling water circulation portion to replenish the water in said first water storage portion, just before start of the power generation operation of said fuel cell.

[5] The fuel cell system according to claim 1, wherein said controller is

configured to perform control such that the water in said first water storage portion is discarded through the discharge port and said water replenishment portion causes said cooling water circulation portion to replenish water in said first water storage portion in a preset cycle, at a time in a power generation operation of the fuel cell.

[6] The fuel cell system according to claim 1, wherein said controller is configured to perform control such that said water replenishment portion causes said cooling water circulation portion to replenish, in said first water storage portion, water that has been heated to have a temperature of 60°C or higher by cooling said fuel cell.

[7] The fuel cell system according to claim 1, wherein said controller is configured to perform control such that said water supply portion supplies water from said first water storage portion to said cooling water circulation portion by using the water that is discharged from at least one of said hydrogen generator and said fuel cell and is condensed by said water condenser.

[8] The fuel cell system according to claim 1, further comprising:
a second water storage portion configured to store a part of the water in said cooling water circulation portion;

wherein said controller is configured to perform control such that a part of water in said cooling water circulation portion is stored in said second water storage portion at a time in a power generation operation of

said fuel cell, and said water replenishment portion causes, instead of said cooling water circulation portion, said second water storage portion to replenish water in the first water storage portion.

[9] The fuel cell system according to claim 1, further comprising:

a cooler configured to cool the water replenished in said first water storage portion from said cooling water circulation portion;

wherein said controller is configured to perform control such that said water replenishment portion causes the cooling water circulation portion to replenish, in said first water storage portion, the water cooled by the cooler.

[10] The fuel cell system according to claim 1, further comprising:

a water temperature detector configured to detect a temperature of the water in said first water storage portion;

wherein the controller is configured to set a cycle in which the water in said first water storage portion is discarded through the discharge port based on the temperature of the water in said first water storage portion that is detected by said water temperature detector.

[11] The fuel cell system according to claim 1, further comprising:

a water purifier configured to purify water supplied by said water supply portion from said first water storage portion to at least one of said hydrogen generator, said fuel cell, and said cooling water circulation portion.

[12] The fuel cell system according to claim 11, wherein said water purifier

includes at least one of ion exchange resin and active carbon.